



PRODUCT CONFORMITY CERTIFICATE

This is to certify that the

Servomex 4900 Multigas Analyser

manufactured by:

Servomex Group Ltd

Jarvis Brook
Crowborough
East Sussex
TN6 3DU
UK

has been assessed by Sira Certification Service
and for the conditions stated on this certificate complies with:

**MCERTS Performance Standards for Continuous Emission
Monitoring Systems, Version 3.1 dated July 2008,
EN15267-3:2007,
& QAL 1 as defined in EN 14181: 2004**

Certification Ranges :

SO ₂	0-572mg/m ³	CO	0-75mg/m ³
NO	0-268mg/m ³	O ₂	0-25% vol
N ₂ O	0-980mg/m ³		

Certification is awarded in respect of the conditions stated in this certificate

Project Number: 674/0336
Certificate No: Sira MC030013/03
Initial Certification: 03 July 2003
This Certificate Issued: 19 November 2008
Renewal Date: 02 July 2013

Technical Director

MCERTS is operated on behalf of the Environment Agency by

Sira Certification Service
12 Acorn Industrial Park, Crayford Road, Crayford
Dartford, Kent, UK, DA1 4AL
Tel: 01322 520500 Fax: 01322 520501

This certificate may only be reproduced in its entirety and without change



Approved Site Application

Any potential user should ensure, in consultation with the manufacturer that the emission monitoring system is suitable for the process on which it will be installed. The manufacturer states that the Servomex 4900 is not suitable for use with corrosive samples and consequently must always be used with an appropriate sample system. Potential interference's are site specific and may vary from stack to stack

For general guidance on stack emission monitoring techniques refer to Environment Agency Technical Guidance Note M2: Monitoring of stack emissions to air. Operators with installations falling under the Large Combustion Plant Directive or Waste Incineration Directive must refer to Technical Guidance Note M20: Quality Assurance of Continuous Emission Monitoring Systems, for guidance on the suitability of CEMS for their installations. M2 and M20 are available on the Agency's website at www.mcerts.net

On the basis of the assessment and the ranges required for compliance with EU Directives this instrument is considered suitable for use on waste incineration and large coal-fired combustion plant applications. This CEM has been proven suitable for its measuring task (parameter and composition of the flue gas) by use of the QAL 1 procedure specified in EN14181, for LCPD and WID applications for the ranges specified. The lowest certified range for each determinand shall not be more than 1.5X the emission limit value (ELV) for WID applications, and not more than 2.5X the ELV for LCPD and other types of application.

Basis of Certification

This certification is based on the following Test Report(s) and on Sira's assessment and ongoing surveillance of the product and the manufacturing process:

TÜV Essen Report:	RWTÜV-3.5.2/0784/95//674377/01 dated 1997 RWTÜV-3.5.2/0784/95//597632/01 dated 1996 RWTÜV-5.0.2/0784/94//20363886 dated 1999
SIRA Report:	N 0415 dated November 2002
SIRA Report:	Ref: 04 Issue 01 dated 05/07/07
TÜV Köln Report	936/21209718/A dated 30/07/08

TÜV reports are accepted on the basis of the Environment Agency's document 'MCERTS – Guidance on the acceptance of German type approval test reports for CEMS' Version 2 (October 2003)

Product Certified

The measuring system consists of the following parts:

- 2 off Servomex 04900 analysers
- Heated filter probe
- Heated sample line
- Sample conditioning system

This certificate applies to all instruments fitted with software version 4X00/CP0_08 onwards (serial number 653043 onwards).

Certificate No: Sira MC030013/03
This Certificate Issued: 19 November 2008

This certificate may only be reproduced in its entirety and without change



Certified Performance

The instrument was evaluated for use under the following conditions:

Ambient Temperature Range: Stack Mounted Components -10°C to +55°C
Control Unit +5°C to +45°C

Control Unit IP rating: IP20

Note: If the instrument is supplied with an enclosure then the ambient temperature shall be monitored inside the enclosure to ensure that it stays within the above ambient temperature range.

Unless otherwise stated the evaluation was carried out on the certification range CO 0 to 75mg/m³, NO 0 to 268mg/m³, SO₂ 0 to 572 mg/m³, N₂O 0 to 980mg/m³, and O₂ 0 to 25%vol

Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Response time						
CO					34s	<200s
NO					35s	<200s
SO ₂					48s	<200s
N ₂ O					30s	<200s
O ₂					26s	<200s
Repeatability standard deviation at zero point						
CO		0.93				<2%
NO	0.07					<2%
SO ₂	0.13					<2%
N ₂ O	0.05					<2%
O ₂	0.00					<0.2%
Repeatability standard deviation at reference point						
CO	0.07					<2%
NO	0.22					<2%
SO ₂	0.13					<2%
N ₂ O	0.12					<2%
O ₂	0.08					<0.2%

Certificate No: Sira MC030013/03
This Certificate Issued: 19 November 2008

This certificate may only be reproduced in its entirety and without change



Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Lack-of-fit						
CO	0.4					<2%
NO	0.4					<2%
SO ₂	0.5					<2%
N ₂ O	-0.45					<2%
O ₂	0.1					<0.2%
Influence of ambient temperature zero point						
CO			-1.5			<5%
NO		-0.8				<5%
SO ₂			1.6			<5%
N ₂ O			<2.0			<5%
O ₂	0.01					<0.5%
Influence of ambient temperature reference point						
CO			1.31			<5%
NO			-1.8			<5%
SO ₂			-1.7			<5%
N ₂ O			<2.0			<5%
O ₂	-0.04					<0.5%
Influence of sample gas flow for extractive CEMS						
CO		0.66				<2%
NO	-0.25					<2%
SO ₂	0.31					<2%
N ₂ O		<1.0				<2%
O ₂	-0.17					<0.2%

Certificate No: Sira MC030013/03
 This Certificate Issued: 19 November 2008

This certificate may only be reproduced in its entirety and without change



Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Influence of voltage variations 190 to 250V						
CO	0.15					<2%
NO	0.00					<2%
SO ₂	0.19					<2%
N ₂ O	<0.2					<2%
O ₂	0.07					<0.2%
Influence of vibration (10 to 60Hz (±0.3mm), 60 to 150Hz at 19.6m/s ²)					No Effect	To be reported
Cross-sensitivity at zero					See Note 1	
CO			1.80			<4%
NO				3.30		<4%
SO ₂			1.30			<4%
N ₂ O			1.20			<4%
O ₂	0.00					<0.4%
Cross-sensitivity at reference					See Note 1	
CO			1.80			<4%
NO		0.60				<4%
SO ₂				2.70		<4%
N ₂ O				3.40		<4%
O ₂	0.00					<0.4%
Measurement uncertainty						
CO					5.5%	Guidance - at least 25% below max permissible uncertainty Annex D
NO					7.3%	
SO ₂					13.7%	
N ₂ O					-	
O ₂					2.3%	

Certificate No: Sira MC030013/03
 This Certificate Issued: 19 November 2008

This certificate may only be reproduced in its entirety and without change



Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Calibration function R ² (field)						
CO					>0.999	>0.95
NO					>0.999	>0.95
SO ₂					>0.999	>0.95
N ₂ O					>0.999	>0.95
O ₂					>0.999	>0.95
Response time					See Note 2	
CO					34s	<200s
NO					35s	<200s
SO ₂					48s	<200s
N ₂ O					30s	<200s
O ₂					26s	<200s
Lack of fit (field)					See Note 3	
CO			<2			<2%
NO			<2			<2%
SO ₂			<2			<2%
N ₂ O			<2			<2%
O ₂			<2			<0.2%
Maintenance interval (field)	With SO ₂ = 2 weeks Without SO ₂ = 3 weeks					>8 days
Zero and Span drift requirement	Compensation for zero and span drift is performed by introducing suitable zero and span gases as described in the 4900 analyser manual					Clause 6.13 & 10.13 Manufacturer shall provide a description of the technique to determine and compensate for zero and span drift.

Certificate No: Sira MC030013/03
 This Certificate Issued: 19 November 2008

This certificate may only be reproduced in its entirety and without change



Test	Results expressed as % of the certification range				Other results	MCERTS specification
	<0.5	<1	<2	<5		
Change in zero point over maintenance interval (field)						
CO					<2% 2 weeks	<3%
NO					1.2% 2 weeks 2.1% 3 weeks	<3%
SO ₂					2.8% 2 weeks	<3%
N ₂ O					-	<3%
O ₂					-	<0.2%
Change in reference point over maintenance interval (field)						
CO					-	<3%
NO					0.4% 2 weeks 0.4% 3 weeks	<3%
SO ₂					1.2% 2 weeks	<3%
N ₂ O					-	<3%
O ₂					-	<0.2%
Availability (field)					98.9%	>95% (>98% for O ₂)
Reproducibility (field)						
CO			1.34			<3%
NO		1.0				<3%
SO ₂			1.32			<3%
N ₂ O					-	<3%
O ₂	0.41					<0.2%

Note 1. Cross sensitivity tested with interferents; O₂, H₂O, CO, CO₂, CH₄, N₂O, NO, NO₂, NH₃, SO₂, HCl, Except N₂O which was tested with N₂, CO₂, CO, NO₂, H₂O & SO₂

Note 2 Response time stated is from the lab test.

Note 3 Data derived from the analysis function test

Certificate No: Sira MC030013/03

This Certificate Issued: 19 November 2008

This certificate may only be reproduced in its entirety and without change



Description:

The Servomex 4900 samples flue gas via an extractive process. The analyser measures oxygen by a magnetodynamic paramagnetic sensor and NO, N₂O, CO and SO₂ by infrared gas filter correlation technology.

The Servomex 4900 series system tested consisted of a Servomex 4995 Sample Conditioning System and two Servomex 4900 analysers to both measure NO, N₂O, CO, SO₂ and O₂. The system also included a heated filter probe model JES 300 (located within the stack) and a heated line model JH3F, both are manufactured by JCT Consulting & Trading GmbH. The configuration of analysers and sample conditioning system can be varied depending upon the application and customer requirements.

General Notes

1. This certificate is based upon the equipment tested. The Manufacturer is responsible for ensuring that on-going production complies with the standard(s) and performance criteria defined in this Certificate. The Manufacturer is required to maintain an approved quality management system controlling the manufacture of the certified product. Both the product and the quality management system shall be subject to regular surveillance according to 'Regulations Applicable to the Holders of Sira Certificates'. The design of the product certified is defined in the Sira Design Schedule for certificate No. Sira MC 030013/01.
2. If certified product is found not to comply, Sira Certification Service should be notified immediately at the address shown on this certificate.
3. The Certification Marks that can be applied to the product or used in publicity material are defined in 'Regulations Applicable to the Holders of Sira Certificates'.
4. This document remains the property of Sira and shall be returned when requested by the company.

Certificate No: Sira MC030013/03
This Certificate Issued: 19 November 2008

This certificate may only be reproduced in its entirety and without change